



ORIGINAL RESEARCH PAPER

Radiodiagnosis

IN VITRO FERTILIZATION --- A BOON OR A BANE

KEY WORDS: In vitro fertilization, Heterotopic pregnancy, bleeding per vaginum, Ultrasonography

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ABSTRACT

To radiologically evaluate a case of 35 year old female who has undergone IVF conception and came for routine ultrasonography. A 35 year old female conceived with in vitro fertilization came for early pregnancy ultrasonography. Ultrasonography performed at 6 weeks 3 days revealed a single intrauterine gestation of 6 weeks 3 days with presence of cardiac activity. On adnexal screening both ovaries were normal with multiple follicles and a cystic structure within the left ovary which was labeled as corpus luteal cyst. The same patient came after 3 weeks with abdominal pain and bleeding per vaginum and repeat ultrasonography was performed which revealed single intrauterine gestation with crown rump length of 1.23 cm corresponding to 7 weeks 3 days. On adnexal screening a cystic structure was seen in the left adnexa which revealed it was a gestational sac with a fetal pole within and with absent cardiac activity which was not seen separately from the ovary. The imaging findings gave the diagnosis of heterotopic pregnancy. Our findings are confirmed intraoperatively. A heterotopic pregnancy is defined as the presence of combined intrauterine and ectopic pregnancy. Its incidence varies between 1:7000 and 1:30000 pregnancies. However in the last decades there has been a significant increase of heterotopic pregnancy following IVF (1/100).

INTRODUCTION:

A heterotopic pregnancy is defined as the presence of combined intrauterine and extrauterine pregnancy. It is life threatening and can be easily overlooked. The early diagnosis of heterotopic pregnancy is often difficult because the clinical symptoms are lacking.

Surgical management is required for the ectopic component and intrauterine pregnancy is expected to continue normally. Recognized risk factors predisposing to heterotopic pregnancy include [3]:

- Pelvic adhesive disease
- Effects of Diethylstilbestrol (DES) on the genital tract
- Use of an Intra-Uterine Contraceptive Device (IUCD)
- Previous history of tubal surgery to treat infertility, ectopic pregnancy or tubal adhesion
- History of previous ectopic pregnancy

In a literature review from Tal *et al.* it was stated that heterotopic pregnancies were diagnosed between 5 and 8 weeks of gestation, 20% between 9 and 10 weeks and only 10% after the 11th week [4].

We present a case of heterotopic pregnancy in a female with IVF conception which was diagnosed on USG in 7th week. Further, which was confirmed on surgical exploration.

MATERIAL AND METHOD:

Obstetric ultrasonography was performed using curvilinear probe of 3-5 Mhz.

CASE REPORT:

A 35 year old female came to our department for obstetric ultrasonography. On detailed history patient had conceived with in vitro fertilization.

According to the last menstrual period date gestational age was 6 weeks 3 days.

Ultrasonography was performed and revealed single intrauterine gestation of 6 weeks 3 days with presence of cardiac activity. On adnexal screening both ovaries were normal with multiple large follicles within. A cystic structure was noted in the left ovary which was labeled as corpus luteal cyst.

The same patient came after 3 weeks with abdominal pain and bleeding per vaginum and repeat ultrasonography was performed which revealed single intrauterine gestation with CRL of 1.23 cm corresponding to 7 weeks 3 days with cardiac activity and poor chorionic reaction.

On adnexal screening a cystic structure was seen in the left adnexa which revealed it was a gestational sac with a fetal

pole within and with absent cardiac activity which was not seen separately from the ovary.

Owing to the current imaging findings we made the diagnosis of heterotopic pregnancy.

The patient was immediately taken up for surgery and our diagnosis of heterotopic pregnancy was confirmed.

DISCUSSION:

Heterotopic pregnancy is simultaneous coexistence of intra-uterine and extra uterine pregnancy. It was first described Duverney in 1708 [8].

On theoretical basis initially the incidence was estimated to 1 in every 30,000 pregnancies.

However, due to increase in IVF pregnancies there is significant increase in the number of heterotopic pregnancies.

In a most recent study the estimate was 1 in every 7000 pregnancies [1]. The classical presentation of heterotopic pregnancy is similar to ectopic pregnancy i.e. abdominal pain and vaginal bleeding after a period of amenorrhoea.

In normal pregnancies with blood beta HCG levels above 1500-2000 mIU/ml.

β -HCG level doubles every 48-72 hours until it reaches 10,000-20,000 mIU/mL in normal pregnancy. In ectopic pregnancies, β -HCG levels usually increase less. Mean serum β -HCG levels are lower in ectopic pregnancies than in healthy pregnancies.

No single serum β -HCG level is diagnostic of an ectopic pregnancy. Serial serum β -HCG levels are necessary to differentiate between normal and abnormal pregnancies and to monitor resolution of ectopic pregnancy once therapy has been initiated.

The discriminatory zone of β -HCG (i.e., the level above which an imaging scan should reliably visualize a gestational sac within the uterus in a normal intrauterine pregnancy) is as follows:

- 1500-1800 mIU/mL with transvaginal ultrasonography, but up to 2300 mIU/mL with multiple gestates.
- 6000-6500 mIU/mL with abdominal ultrasonography.

Absence of an intrauterine pregnancy on a scan when the β -HCG level is above the discriminatory zone represents an ectopic pregnancy or a recent abortion [2].

Even in cases of bilateral salpingectomy cornual heterotopic pregnancy has been described in an IVF patient [5].

Heterotopic pregnancy should be considered as differential diagnosis in women in the reproductive age group presenting with pelvic pain, even when there are no known risk factors [6].

Miscarriage of the viable IUP can follow treatment of a heterotopic pregnancy. Clayton et al. reported that 84 (40.6%) out of 207 heterotopic cases ended with abortion either spontaneously or induced [7].

Therefore, laparoscopic salpingectomy is the standard approach and is the first line of treatment in the setting of a ruptured EP [9].

Most commonly, the location of ectopic gestation in a heterotopic pregnancy is the fallopian tube. However, cervical and ovarian heterotopic pregnancies have also been reported [10, 11].

It has life threatening complications like tubal rupture,

hypovolemic shock, hemoperitoneum and hemo salpinx.

CONCLUSION:

Heterotopic pregnancy is difficult to diagnose. Nearly 85% goes undiagnosed until there is a rupture of ectopic pregnancy that accompanies the intrauterine pregnancy. In this case the adnexal gestational sac was wrongly interpreted as a corpus luteal cyst. However with alteration in every serial β -HCG levels should be suspicious of heterotopic pregnancy, especially in the cases of IVH

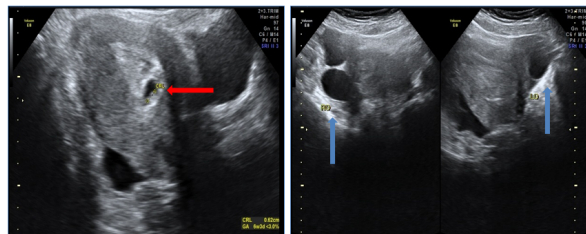


Figure I and II: Ultrasonography performed at 6 weeks 3 days revealed a single intrauterine gestation of 6 weeks 3 days with cardiac activity (red arrow) and both ovaries were normal with multiple follicles (blue arrow) and a cystic structure within the left ovary which was labeled as corpus luteal cyst. No evidence of any adnexal lesion or collection was noted.

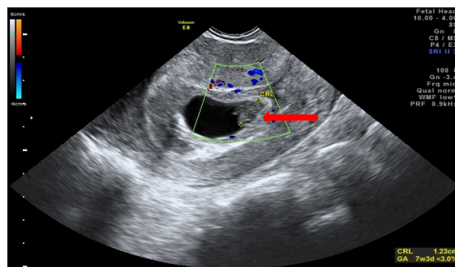


Figure III: The repeat ultrasonography revealed single intrauterine gestation with CRL = 1.23 cm corresponding to 7 weeks 3 days (red arrow).

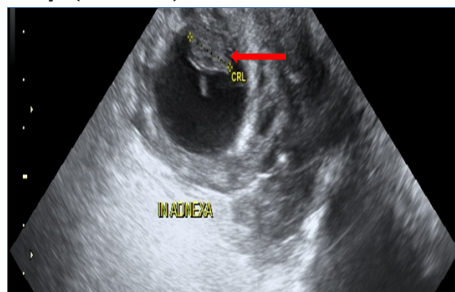


Figure IV: A cystic structure in the left adnexa (red arrow).

Detailed evaluation of the cystic structure revealed it was a gestational sac with a fetal pole within and with absent cardiac activity.

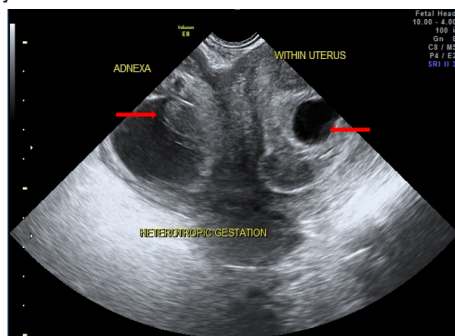


Figure V: Left ovary was not seen separately from the gestational sac in adnexa (red arrow).

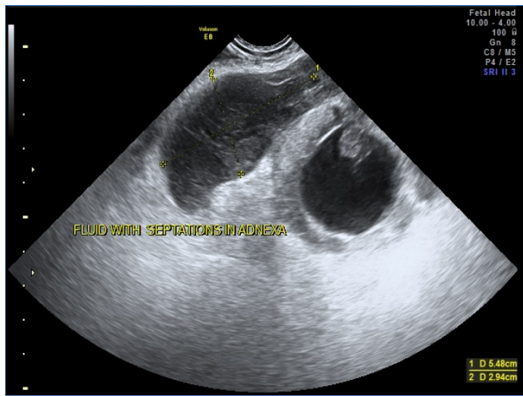


Figure VI: Note the fluid with fine echoes and septations in the left adnexa which represents hemoperitoneum (red arrow).

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